

University of Nebraska - Lincoln

## DigitalCommons@University of Nebraska - Lincoln

---

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.  
Larsen

---

January 2000

### Test 1785: Case IH STX 440 Quadtrac/Case IH STX 450 Quadtrac Diesel

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>

 Part of the [Applied Mechanics Commons](#)

---

"Test 1785: Case IH STX 440 Quadtrac/Case IH STX 450 Quadtrac Diesel" (2000). *Nebraska Tractor Tests*. 241.

<https://digitalcommons.unl.edu/tractormuseumlit/241>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

# NEBRASKA OECD TRACTOR TEST 1785 - SUMMARY 337

## CASE IH STX 440 QUADTRAC DIESEL

## ALSO CASE IH STX 450 QUADTRAC DIESEL

## 16 SPEED

### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1001 rpm)					
399.14 (297.64)	1999	22.03 (83.39)	0.387 (0.236)	18.12 (3.57)	
Maximum Power (2 Hours)					
450.29 (335.78)	1599	22.26 (84.27)	0.347 (0.211)	20.23 (3.98)	
VARYING POWER AND FUEL CONSUMPTION					
399.14 (297.64)	2000	22.03 (83.39)	0.387 (0.236)	18.12 (3.57)	Air temperature
346.75 (258.58)	2044	20.09 (76.06)	0.407 (0.247)	17.26 (3.40)	75°F (24°C)
263.79 (196.71)	2072	16.33 (61.82)	0.434 (0.264)	16.15 (3.18)	Relative humidity
178.35 (133.00)	2102	12.78 (48.39)	0.503 (0.306)	13.95 (2.75)	40%
90.16 (67.23)	2129	9.06 (34.31)	0.705 (0.429)	9.95 (1.96)	Barometer
0.82 (0.31)	2160	5.34 (20.23)	45.548 (27.706)	0.15 (0.03)	28.95" Hg (98.04 kPa)
Maximum Torque - 1583 lb.-ft. (2146 Nm) at 1099 rpm					
Maximum Torque Rise - 50.7%					
Torque rise at 1599 engine rpm - 41%					

### DRAWBAR PERFORMANCE

### FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—4th Gear									
345.68 (257.77)	28894 (128.53)	4.49 (7.22)	1997	3.09	0.450 (0.273)	15.61 (3.08)	188 (87)	62 (17)	29.09 (98.51)
75% of Pull at Maximum Power—4th Gear									
270.24 (201.52)	21598 (96.07)	4.69 (7.55)	2055	1.72	0.480 (0.292)	14.61 (2.88)	183 (84)	67 (19)	29.08 (98.48)
50% of Pull at Maximum Power—4th Gear									
184.21 (137.36)	14399 (64.05)	4.80 (7.72)	2089	0.97	0.562 (0.342)	12.48 (2.46)	183 (84)	83 (28)	29.06 (98.41)
75% of Pull at Reduced Engine Speed—7th Gear									
269.32 (200.84)	21581 (96.00)	4.68 (7.53)	1484	1.72	0.412 (0.251)	17.03 (3.36)	188 (87)	82 (28)	29.07 (98.44)
50% of Pull at Reduced Engine Speed—7th Gear									
183.63 (136.93)	14390 (64.01)	4.79 (7.70)	1505	0.88	0.438 (0.266)	16.04 (3.16)	182 (83)	85 (29)	29.05 (98.37)

**Location of Test:** Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln Nebraska 68583-0832

**Dates of Test:** October 4 - 19, 2000

**Manufacturer:** Case Corporation, 700 State Street Racine, Wi. 53404 USA.

**FUEL, OIL and TIME:** Fuel No. 2 Diesel Specific gravity converted to 60°/60° F (15°/15°C) 0.8427 Fuel weight 7.017 lbs/gal (0.841 kg/l) Oil SAE 15W40 API service classification CH-4 Transmission and hydraulic lubricant Case Hy-Tran Ultra fluid Front and rear axle lubricant Case Hy-Tran Ultra fluid Total time engine was operated 25.5 hours

**ENGINE:** Make Cummins Diesel Type six cylinder vertical with turbocharger and air to air aftercooler Serial No. 14007184 Crankshaft lengthwise Rated engine speed 2000 Bore and stroke 5.394" x 6.654" (137.0 mm x 169.0 mm) Compression ratio 16.5 to 1 Displacement 912 cu in (14945 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements and aspirator Oil filter one full flow cartridge Oil cooler engine coolant heat exchanger for crankcase oil, radiator for transmission and hydraulic oil Fuel filter one paper element Fuel cooler radiator for returned fuel Muffler vertical Cooling medium temperature control one thermostat and variable speed fan

**ENGINE OPERATING PARAMETERS:** Fuel rate: 141.6 - 156.1 lb/h (64.2 - 70.8 kg/h) High idle: 2125 - 2165 rpm Turbo boost: nominal 21.2 - 24.1 psi (146 - 166 kPa) as measured 22.4 psi (154 kPa)

**CHASSIS:** Type Tracklayer - rubber tracked Serial No. \*JEE0097543\* Track width rear 88.0" (2235 mm) front 88.0" (2235 mm) Trackbase 154.0" (3912 mm) Length of track on ground 29.4" (748 mm) Hydraulic control system direct engine drive Transmission selective gear fixed ratio with full range operator controlled powershift Nominal travel speeds mph (km/h) first 2.65 (4.26) second 3.19 (5.13) third 3.85 (6.19) fourth 4.64 (7.46) fifth 5.33 (8.57) sixth 5.85 (9.41) seventh 6.41 (10.32) eighth 7.04 (11.33) ninth 7.74 (12.46) tenth 8.51 (13.69) eleventh 9.33 (15.01) twelfth 10.25 (16.49) thirteenth 11.76 (18.93) fourteenth 14.16 (22.80) fifteenth 17.11 (27.55) sixteenth 20.61 (33.16) reverse 4.01 (6.45), 8.86 (14.26) Clutch multiple wet disc electro-hydraulically operated by foot pedal Brakes single wet disc hydraulically actuated by foot pedal Steering hydrostatic and articulated Power take-off 1000 rpm at 1998 engine rpm Unladen tractor mass 51355 lb (23294 kg)

## DRAWBAR PERFORMANCE MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd Gear									
297.21 (221.63)	38412 (170.86)	2.90 (4.67)	1605	6.06	0.410 (0.250)	17.10 (3.37)	185 (85)	57 (14)	29.09 (98.51)
4th Gear									
357.33 (266.46)	38231 (170.06)	3.51 (5.64)	1613	6.26	0.419 (0.255)	16.77 (3.30)	192 (89)	63 (17)	29.09 (98.51)
5th Gear									
377.91 (281.81)	35012 (155.74)	4.05 (6.51)	1604	5.20	0.409 (0.249)	17.14 (3.38)	194 (90)	64 (18)	29.09 (98.51)
6th Gear									
383.46 (285.95)	31944 (142.09)	4.50 (7.24)	1606	4.15	0.408 (0.248)	17.21 (3.39)	193 (89)	67 (19)	29.09 (98.51)
7th Gear									
381.10 (284.19)	28746 (127.87)	4.97 (8.00)	1603	3.27	0.409 (0.249)	17.15 (3.38)	192 (89)	70 (21)	29.09 (98.51)
8th Gear									
386.04 (287.87)	26482 (117.80)	5.47 (8.80)	1596	2.82	0.401 (0.244)	17.51 (3.45)	191 (88)	71 (22)	29.08 (98.48)
9th Gear									
382.40 (285.16)	23604 (104.99)	6.08 (9.78)	1601	2.09	0.406 (0.247)	17.28 (3.40)	192 (89)	72 (22)	29.08 (98.48)
10th Gear									
385.33 (287.34)	21575 (95.97)	6.70 (10.78)	1601	1.72	0.407 (0.247)	17.26 (3.40)	193 (89)	72 (22)	29.07 (98.44)
11th Gear									
382.25 (285.05)	19431 (86.43)	7.38 (11.87)	1605	1.44	0.409 (0.249)	17.17 (3.38)	191 (88)	74 (23)	29.06 (98.41)
12th Gear									
380.95 (284.08)	17614 (78.35)	8.11 (13.05)	1602	1.21	0.408 (0.248)	17.20 (3.39)	191 (88)	77 (25)	29.06 (98.41)

**REPAIRS AND ADJUSTMENTS:** Norepairs or adjustments.

**Note:** This tractor has a driveline protection system that limits the maximum engine torque in gears 1 through 4.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests, the fuel temperature at the injection pump inlet was maintained at 108°F (42°C). The performance figures on this Summary were taken from a test conducted under the OECD Code II test procedure.

**Report reissued:** Supplemental sales permit for Case IH STX 450 Quadtrac Diesel, January, 2002.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1785**, Nebraska Summary 337, January 8, 2002.

Brent T. Sampson  
Test Engineer

L.L. Bashford  
M.F. Kocher  
V.I. Adamchuk  
Board of Tractor Test Engineers

## TRACTOR SOUND LEVEL WITH CAB

dB(A)

At no load in 4th gear	76.0
Bystander	--

## TRACKS AND WEIGHT

**Rear tracks** - No. & size  
**Front tracks** - No. & size  
**Height of Drawbar**  
**Static Weight with operator** - Rear  
- Front  
- Total

## Tested Without Ballast

2 x 30" (762 mm)  
2 x 30" (762 mm)  
14.0 in (355 mm)  
22750 lb (10319 kg)  
28780 lb (13054 kg)  
51530 lb (23373 kg)

### THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: IV

Quick Attach: yes

Maximum Force Exerted

Through Whole Range: 19728 lbs (87.8 kN)

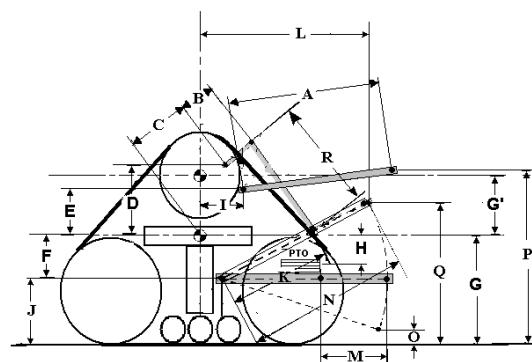
		<u>High flow option</u>
i) Opening pressure of relief valve:	NA	NA
Sustained pressure of the open relief valve:	2870 psi (198 bar)	2900 psi (200 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	40.9 GPM (154.8 l/min)	55.2 GPM (209.0 l/min)
iii) Pump delivery rate at maximum hydraulic power:	34.6 GPM (131.0 l/min)	51.4 GPM (194.6 l/min)
Delivery pressure:	2450 psi (169 bar)	2300 psi (159 bar)
Power:	49.5 HP (36.8 kW)	69.0 Hp (51.4 kW)

### HITCH DIMENSIONS AS TESTED - NO LOAD

	inch	mm
A	32.6	827
B	29.9	760
C	23.2	590
D	22.0	558
E	13.5	342
F	13.4	340
G	35.0	890
*G'	11.8	300
H	4.6	117
I	22.8	578
J	21.6	550
K	29.0	736
L	56.3	1431
*L'	63.6	1615
M	34.3	871
N	46.5	1181
O	7.9	200
P	45.4	1154
Q	40.9	1039
R	38.5	978

\*G' to undercarriage pivot point

\*L' to Quick coupler ends



Case IH STX 440 Quadtrac Diesel

Agricultural Research Division  
Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln  
Darrell Nelson, Dean and Director